

CLAIMS

What is claimed is:

- 5 1. A flash freezer for use within a primary freezer having a refrigerated air compartment, the flash freezer comprising:
- a freezer cabinet formed by peripheral cabinet walls and defining an internal flash freeze compartment;
- the freezer cabinet being configured to be positioned within and exposed to
- 10 refrigerated air within the refrigerated air compartment of the primary freezer;
- a plenum within the cabinet adjacent the flash freeze compartment and separated from the flash freeze compartment by a bulkhead;
- a plurality of first air passage apertures formed through the bulkhead to permit passage of air between the flash freeze compartment and the plenum;
- 15 wherein one cabinet wall is disposed across the flash freeze compartment from the bulkhead;
- a plurality of second air passage apertures formed through the one cabinet wall;
- and
- 20 an air mover connected to the plenum and operable to move refrigerated air under pressure from the refrigerated air compartment, through the first and second air passage apertures, with said first and second air passage apertures acting to direct a generally uniform pressurized air flow through the flash freeze compartment.
- 25 2. The flash freezer of claim 1, wherein the second air passage apertures are in at least approximate alignment across the flash freeze compartment with the first air passage apertures.
3. The flash freezer of claim 1, wherein the air mover is a high static fan connected
- 30 to the plenum to deliver refrigerated air under positive pressure through the first and second air passage apertures.

4. The flash freezer of claim 1, wherein the air mover is configured to produce a positive air pressure within the plenum.

5. The flash freezer of claim 1, further comprising a material holder rack within the flash freeze compartment, with holders arranged to receive and position a plurality of articles to be frozen in spaced and staggered relation to encourage even air flow about individual articles of the plurality.

6. The flash freezer of claim 1, further comprising an isolator for each of the first and second air passage apertures, and positionable to selectively close the first and second air passage apertures.

7. The flash freezer of claim 1, further comprising isolation plates slidably mounted on the freezer cabinet to selectively close the first and second air passage apertures.

8. The flash freezer of claim 1, further comprising isolation plates slidably mounted on the freezer cabinet adjacent the first and second air passage apertures to selectively close the first and second air passage apertures and wherein the isolation plates include gate apertures that substantially match the first and second air passage apertures in size, spacing and number; and

wherein the isolation plates are movable into positions in which the gate apertures are in registration with the first and second air passage apertures to permit airflow through all the first and second air passage apertures, and to closed positions out of registration with the first and second air passage apertures to inhibit airflow through all of the first and second air passage apertures.

9. The flash freezer of claim 1, further comprising isolation plates slidably mounted on the freezer cabinet adjacent the first and second air passage apertures to selectively close the first and second air passage apertures and wherein the isolation plates include gate apertures that substantially match the first and second air passage apertures in size, spacing and number;

wherein the isolation plates are movable into positions in which the gate apertures are in registration with the first and second air passage apertures to permit airflow through all the first and second air passage apertures, and to closed positions out of registration with the first and second air passage apertures to inhibit airflow through all of the first and second air passage apertures; and

further comprising handles on the isolation plates projecting from the freezer cabinet to permit manual access to manually move the isolation plates.

10. The flash freezer of claim 1, wherein the first and second air passage apertures are of substantially equal size.

11. The flash freezer of claim 1, wherein the flash freeze compartment is sub-divided into multiple sub-compartments by partition walls spanning the flash freeze compartment between the bulkhead and the one cabinet wall.

12. The flash freezer of claim 1, further comprising an access door on the cabinet, permitting access to the flash freeze compartment and positioned between the bulkhead and one cabinet wall.

13. The flash freezer of claim 1, further comprising opposed access doors on the cabinet, permitting access to the flash freeze compartment from opposite sides of the cabinet, and which are positioned on the cabinet between the bulkhead and one cabinet wall.

14. The flash freezer of claim 1, wherein the cabinet is formed of an uninsulated heat transmissive material.

15. The flash freezer of claim 1, further comprising a supplementary cooling unit operably connected to the cabinet and in communication with the air mover.

16. The flash freezer of claim 1, wherein the cabinet defines a plurality of the internal flash freeze compartments that are separated from one another by partition walls.

17. A flash freezer, comprising:

a primary freezer having a refrigerated air compartment defined by insulated walls and a primary access;

a freezer cabinet configured to be positioned within and exposed to refrigerated air within the refrigerated air compartment of the primary freezer;

a plenum within the cabinet adjacent the flash freeze compartment and separated from the flash freeze compartment by a bulkhead;

a plurality of first air passage apertures formed through the bulkhead to permit passage of air between the flash freeze compartment and the plenum;

wherein one cabinet wall is disposed across the flash freeze compartment from the bulkhead;

a plurality of second air passage apertures formed through the one cabinet wall; and

an air mover connected to the plenum and operable to move refrigerated air under pressure from the refrigerated air compartment, through the first and second air passage apertures, with said first and second air passage apertures acting to direct a generally uniform pressurized air flow through the flash freeze compartment;

at least one door in the cabinet;

wherein the freezer cabinet is positioned adjacent one of the insulated walls with the first and second air passage apertures oriented to direct the air flow substantially parallel to the one insulated wall; and

an access door in the one insulated wall to permit access to the door in the cabinet and to permit access to the flash freeze compartment from outside the primary freezer.

18. The flash freezer of claim 17, and wherein the second air passage apertures are in at least approximate alignment across the flash freeze compartment with the first air passage apertures.
- 5 19. The flash freezer of claim 17, and further comprising a refrigeration unit within the primary freezer and ductwork leading from the refrigeration unit to the freezer cabinet and configured to deliver refrigerated air to the freezer cabinet.
20. The flash freezer of claim 17, further comprising a plurality of the freezer cabinets and air movers releasably stacked in a group.
- 10 21. A process for flash freezing an array of articles within a refrigerated air compartment of a primary freezer, comprising:
- providing a freezer cabinet capable of placement within the refrigerated compartment;
 - providing a flash freeze compartment within the cabinet for receiving the array of
 - 15 articles;
 - locating a plenum chamber to one side of the flash freeze compartment;
 - producing an airflow of the refrigerated air through the plenum chamber and flash freeze compartment in a prescribed direction;
 - controlling the air to flow in a uniform manner about the array of articles; and
 - 20 producing a pressure within the flash freeze compartment that is different from ambient air pressure within the refrigerated air compartment.
22. The process of claim 21 wherein controlling airflow in a uniform manner is accomplished by locating first and second air passages on opposed sides of the flash freeze compartment and between the flash freeze compartment and plenum.
- 25 23. The process of claim 21 wherein producing pressure is accomplished by placing a high static fan in operable communication with the plenum.

24. The process of claim 21 wherein producing pressure is accomplished by placing a discharge side of a high static fan in open communication with the plenum, and operating the high static fan to force air under pressure and in a prescribed direction through the flash freeze compartment.

5 25. The process of claim 21, wherein controlling the air to flow in a uniform manner is accomplished by spacing the articles evenly apart within the flash freeze compartment.